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WORKING DRAFT

Guidelines for the use of Internet-IP addresses in the ISO Connectionless-Mode Network Protocol

Status of This Memo

This RFC suggests a method to allow the existing IP addressing, including the IP protocol field, to be used for the ISO Connectionless Network Protocol (CLNP). This is a draft solution to one of the problems inherent in the use of "ISO-grams" in the DOD Internet. Related issues will be discussed in subsequent RFCs. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements. Distribution of this memo is unlimited.

1. Introduction

The CLNP is documented in [1], but for matters of completeness the following illustration of the CLNP header is included here as Figure 1.

The addressing part of the header is the subject of this RFC, i.e., the source and the destination address, respectively. These addresses are generally discussed in [2] and [3], with this document presenting a specific method for addressing in the DOD Internetwork environment, consistent with the international standardized NSAP addresses.

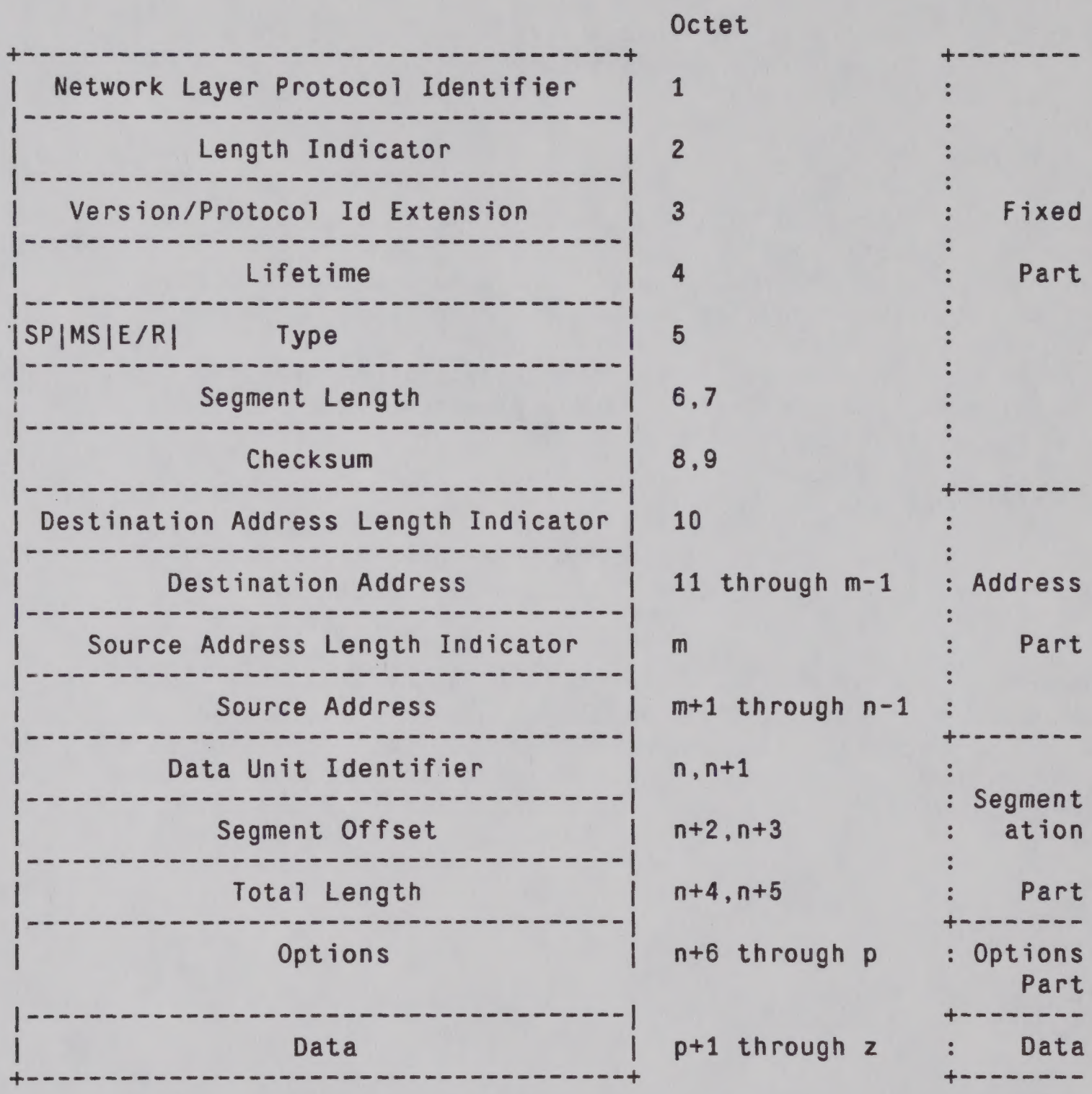

Figure 1: PDU Header Format

2. Addresses for Use in the Internet

This section describes the primary addresses used to address NSAPs in the Internet. A later section will describe a separate address format for end systems and individual simple LANs that are attached to the Internet only through intervening Public Data Networks.

The appropriate Authority and Format Identifier (AFI) is one octet in length.

> "The AFI consists of an integer with a value between 0 and 99 with an abstract syntax of two decimal digits" [3], that is, the AFI codes are binary coded decimal (BCD).

It specifies an ISO-6523-ICD assignment, and also that the Domain Specific Part (DSP) of the address is based on binary. The AFI octet uses the value "47". The ISO-6523-ICD format is used to emphasize that this is an administrative assignment. The usage of an ISO DCC (Data Country Code) would be possible, but could be misleading due to the fairly far spread geographical extent of the Internet-IP.

As required by the ISO addressing standard, the next two octets of the address, in this case, specify the Initial Domain Identifier. This two octet value is the International Code Designator (ICD) assigned to the DOD Internet, "0006".

The remainder of the NSAP address is the Domain Specific Part (DSP). This is assigned by the Internet administration, which is considered to be an addressing domain. The remainder of the address specifies a one byte version number, the four byte Internet Protocol address and a one byte IP user protocol field. The version number allows for future extensions. The IP address used is the same as the current four octet IP address. The user protocol field is the same as the user protocol field in the current IP header. This is necessary because the ISO protocol considers identification of the user protocol to be an addressing issue, and therefore does not allow for the user protocol to be specified in the protocol header independently from the address.

Therefore a source or destination address within the ISO Connectionless Protocol, when used in the DOD Internet, looks as follows:

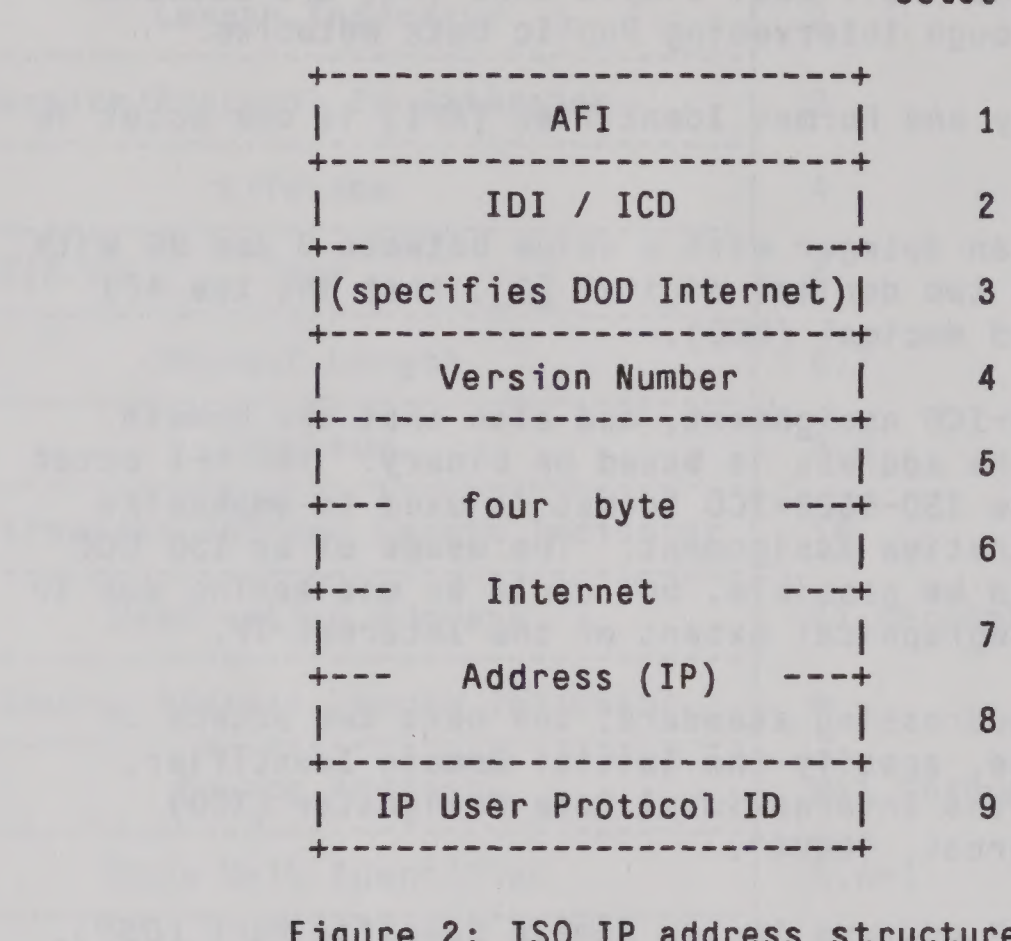

Figure 2: ISO IP address structure

The Authority and Format Identifier (AFI) is "47" (BCD). The Initial Domain Identifier (IDI) consists of the International Code Designator (ICD) assigned to the Internet, and must contain the value "0006". The Version Number must contain the value "01". The Current IP addresses and IP user protocol numbers can be found in [4].

3. Devices Attached to PDNs

Otherwise isolated end systems, which are attached to the Internet only indirectly via public data networks, and simple LANs which are similarly attached only via Public Data Networks, will make use of a separate address format based on their X.121 address.

Figure 3 specifies the address for use by end systems attached to PDNs. Here the AFI specifies an ISO-X.121 address format, with the DSP based on binary. The AFI occupies a single octet, and must take the value "37" (hexadecimal). The IDI contains the X.121 addresses

encoded in binary (using BCD), padded at the end if necessary with all ones (binary "1111") to make up 7 full octets. Finally, the DSP contains a single octet, which specifies the user protocol.

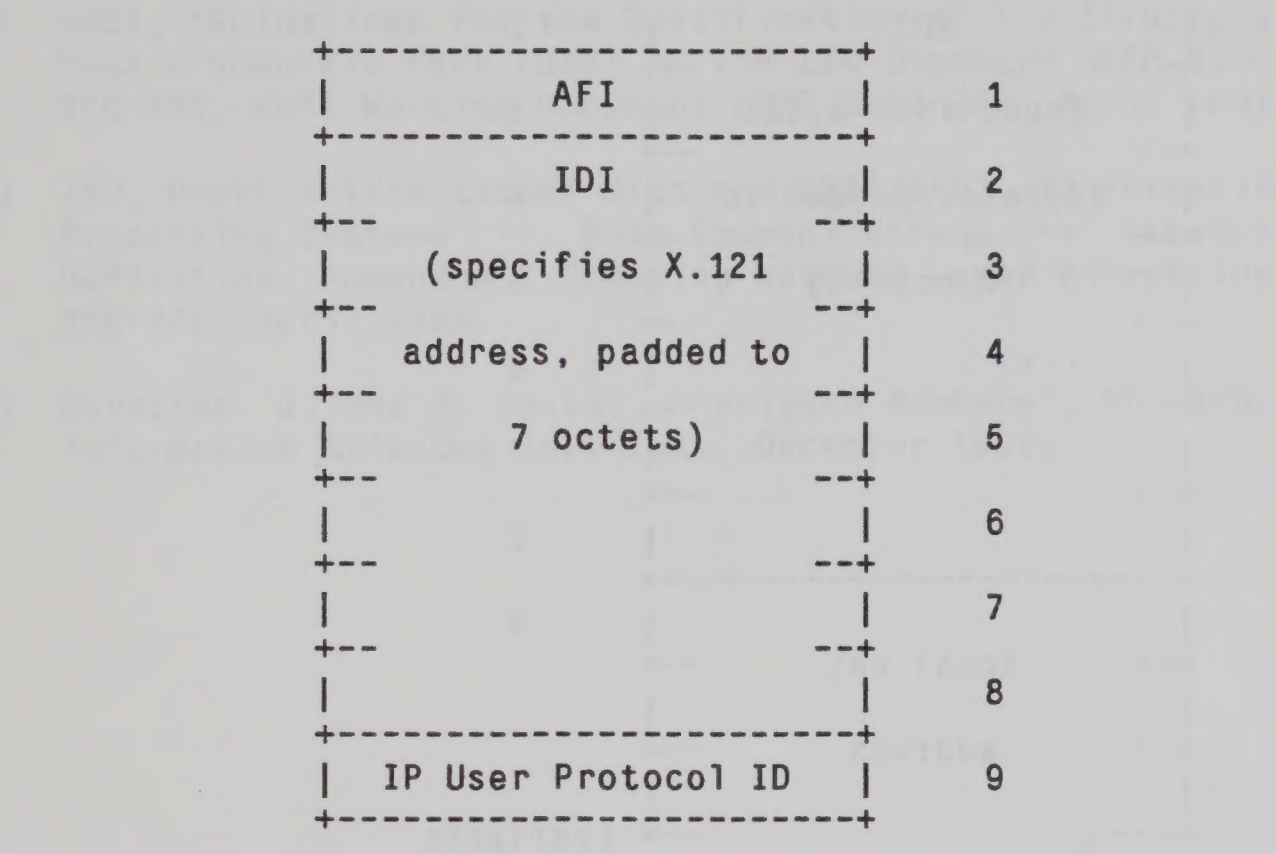

Figure 3: ISO IP address structure for isolated end systems

Figure 4 specifies the address for use by simple LANs attached to PDNs. This address is the same as the address used for end systems directly attached to PDNs, except for the addition of the (variable length) local address as used on the LAN. Whether the address is of the form shown in figure 3, or of the form shown in figure 4, is determined by looking at the length of the address.

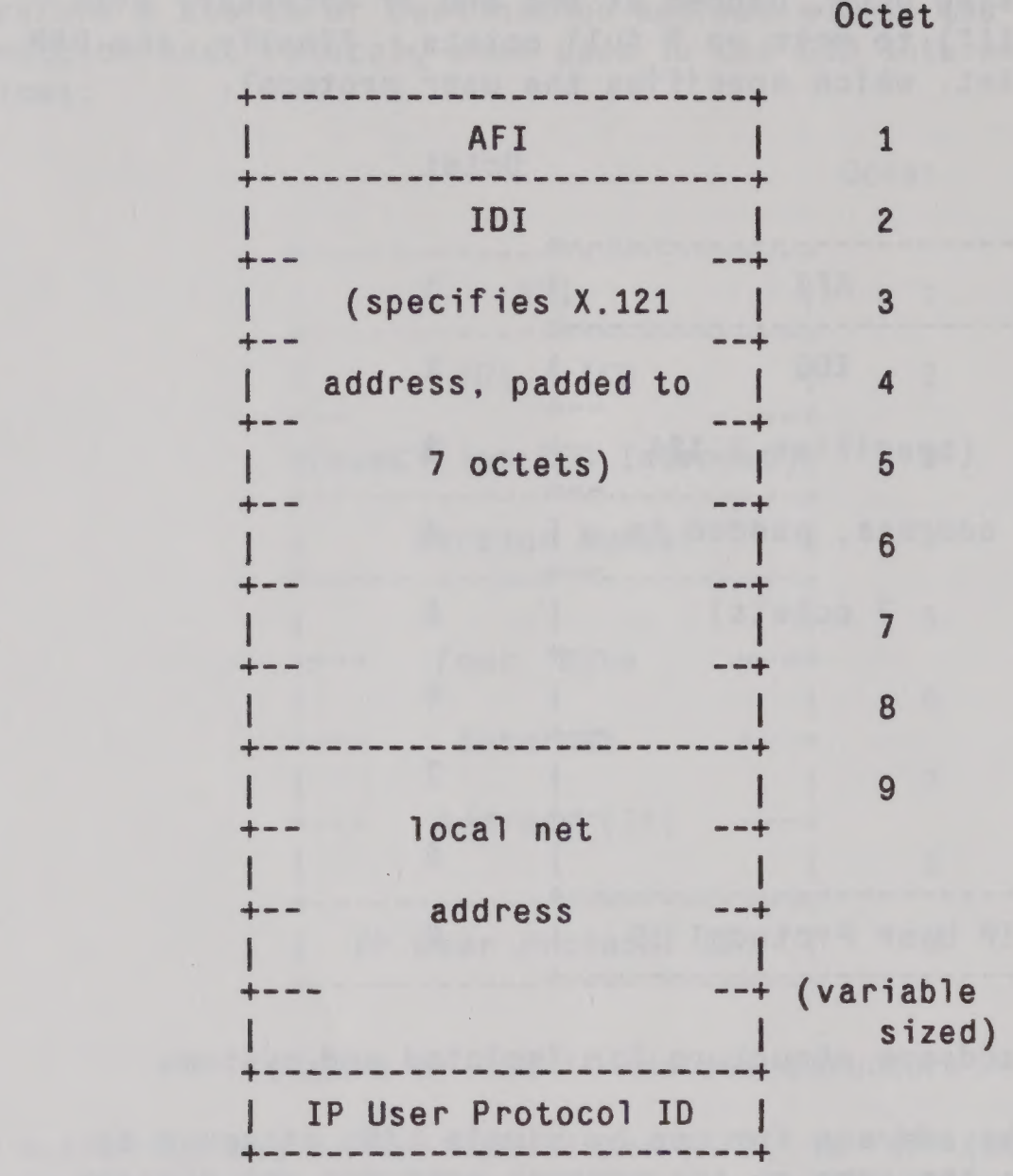

Figure 4: ISO IP address structure for isolated LANs

References

[1] ISO, "Protocol for Providing the Connectionless-Mode Network Services", RFC-926, ISO, December 1984.

[2] ANSI, "Guidelines for the Specification of the Structure of the Domain Specific Part (DSP) of the ISO Standard NSAP Address", RFC-982, ANSI Working Document X3S3.3/85-258, April 1986.

[3] ISO, Draft International Standard 8348/DAD2, "Information Processing Systems -- Data Communications -- Network Service Definition, Addendum 2 Covering Network Layer Addressing", RFC-941, April 1985.

[4] Reynolds, J. and J. Postel, "Assigned Numbers", RFC-960, USC Information Sciences Institute, December 1985.